Technical white paper

HP Client Integration Kit for Microsoft System Center 2012 Configuration Manager

User Guide

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Terms and definitions

BCU	HP BIOS Configuration Utility
CIK	HP Client Integration Kit for Microsoft® System Center 2012 Configuration Manager
REPSET	Replication Setup File; in the context of this document, a BIOS configuration file
SoftPaq	An HP update, usually with the naming convention spxxxxx.exe (where xxxxx are digits)
Driver pack	A SoftPaq containing drivers for Windows operating system deployment via driver injection—each driver pack supports one or more products
SDM	HP SoftPaq Download Manager

Feature overview

HP Client Integration Kit for Microsoft System Center 2012 Configuration Manager (CIK) is a plugin for the Configuration Manager console that simplifies the operating system deployment process for HP systems. The plugin automates some of the configuration steps that were previously done manually.

The plugin adds the following features to Configuration Manager:

• Importation of HP driver packs
• Creation of Windows® Preinstallation Environment (WinPE) boot images with HP drivers added
• Creation of operating system deployment task sequence templates specific to HP
• Application of custom BIOS settings during a task sequence

Requirements

The kit can be installed on either a supported version of a Configuration Manager primary site server or any computer with the corresponding supported Configuration Manager console installed.

Note
CIK must be installed on the Configuration Manager server for supporting packages and custom steps to be available. When installing CIK to a console-only client, the packages and custom steps will not be installed.

When installing to the server, note the following requirements:

• HP recommends installing the latest Windows service packs and updates for the server operating system and Configuration Manager.
• Configuration Manager and Windows Deployment Services (WDS) must be properly configured for use with the operating system deployment (OSD) and Preboot Execution Environment (PXE) function.
• Purpose-specific collections (for example, the collection of systems targeted for deployment) must also be available for the OSD.
• Supported client operating system installation packages or images must be loaded in Configuration Manager.

For more information on preparing or using your Configuration Manager setup, see the Microsoft documentation; applicable resources might also be available in the For more information section of this document.

Supported Configuration Manager versions

- System Center 2012 R2 Configuration Manager service pack 1 (SP1) with or without cumulative update 1 (CU1) or later and its console
- System Center 2012 R2 Configuration Manager and its console
- System Center 2012 Configuration Manager SP2 with or without CU1 or later and its console
- System Center 2012 Configuration Manager SP1 and its console
- System Center Configuration Manager 1511, 1602, or 1606

Note
To import Windows 10 drivers or customize the boot image, you must have CU1 or later for either Configuration Manager 2012 R2 SP1 or Configuration Manager 2012 SP2.

Supported HP devices

- All HP desktops, notebooks, and workstations that have compatible driver packs (see Obtaining HP driver packs for more details)

Supported client operating systems

- Windows 10
- Windows 8.1
- Windows 8
- Windows 7

Note
Windows Vista® and Windows XP are not supported by CIK.

Installing CIK

A plugin needs to be installed on the primary site server in addition to console-only clients to ensure that CIK packages and custom steps are available.

Before running this installation, ensure that all instances of the Configuration Manager console are closed.

1. Run the setup file and follow the on-screen instructions to complete the installation.
2. Once the installation is complete, supporting packages must be pushed out to the local distribution points. Perform the following:
   A. In the Configuration Manager console, select **Software Library**, expand **Overview > Application Management > Packages**, and then select **HP Client Support Packages**.
   B. For each package in the folder, select **Distribute Content** (for a first-time installation) or **Update Distribution Points** (for an upgrade). Follow the instructions in the dialog box or wizard that is displayed.

      The packages to be pushed are:
      - HP Client BIOS Configuration Utility
   - HP Client Support Tools

Note
Do not delete or rename the packages, as that might cause dependent task sequences to fail. If a package is accidentally deleted, run the setup again and select the **Repair** option. Then, refresh the task sequences using the package. See Refreshing task sequence references for more information.

Console integration

The following new menu items and folders/packages have been added or can be added after certain actions are completed in the console. The solid boxes indicate the Configuration Manager folders/packages. The dashed-line boxes indicate menu items. The dot-and-dash boxes are folders that might not be created until a driver pack or boot image is created via CIK.

Figure 1. Features added by the CIK in the Configuration Manager console
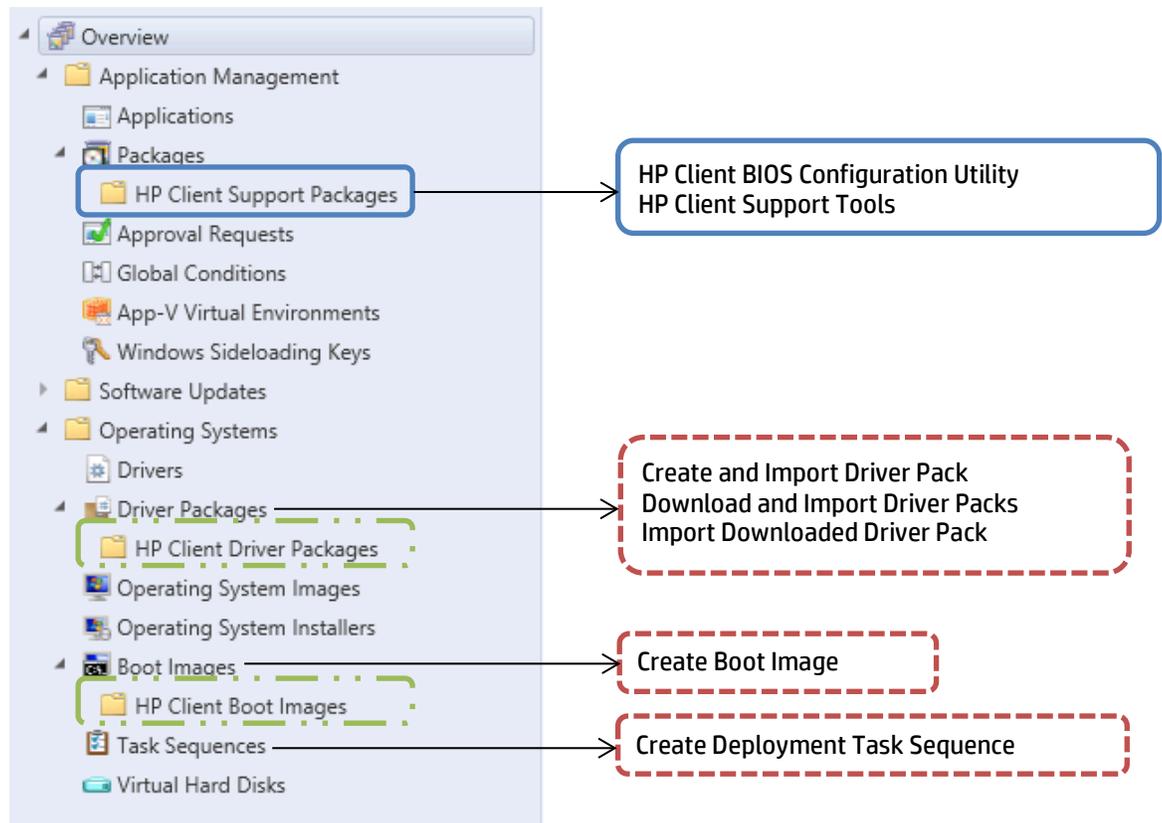
Menu items can be invoked by using the ribbon menu or the right-click context menu. Menu items added by HP have the HP logo attached to them.

HP client driver packs

Selecting HP products to create a driver pack or to import drivers

CIK version 3.0 and higher offers a Create and Import HP Client Driver Pack menu item that displays the drivers for supported HP products.

1. In the Configuration Manager console, select **Software Library**, expand **Overview**, expand **Operating Systems**, and then select **Driver Packages**.
2. In the ribbon menu, select **HP Client PCs**, and then select **Create and Import HP Client Driver Pack**. The Create and Import HP Client Driver Pack wizard is displayed.
3. Select the **Operating system**. The products that support driver-pack creation are displayed in the **Available products** box.
4. Optionally, enter keywords into the **HP product name** box, and then press **Enter** to filter the list of available products.
5. Select a products, and then click the right-arrow button to add the products to the **Selected products** for the targeted operating system deployment.

6. Repeat step 5 to select another product, as necessary. HP recommends selecting products of the same family model only to create a driver pack with the optimal relevant drivers. Also, HP recommends selecting no more than five products per driver pack. For example, you might select HP ProBook 640 G1 Notebook PC and HP ProBook 650 G1 Notebook PC to create an HP ProBook 640/650 G1 Notebook PC driver pack.

Figure 2. Create and Import HP Client Driver Pack wizard—Select an operating system and HP product(s)
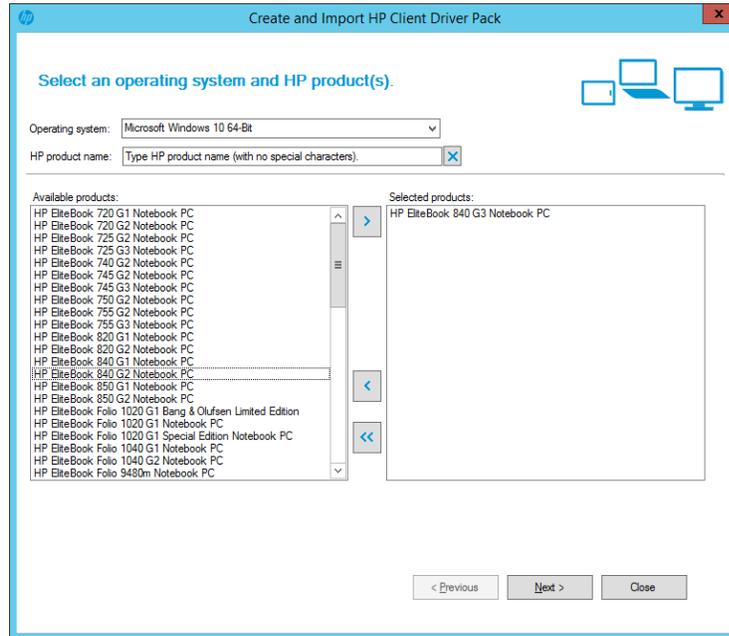
7. Click **Next**.

8. By default, the **Create driver package with the selected drivers below** import option is selected. This creates a driver package for the selected drivers.

   A. Enter a **Name** for the driver package. Enter a **Version** and a **Comment**, if necessary.

   B. Under drivers, select the drivers to include in the driver package and be sure that all other drivers are cleared.

   Figure 3. Create and Import HP Client Driver Pack wizard—Create driver package with the selected drivers below

– or –
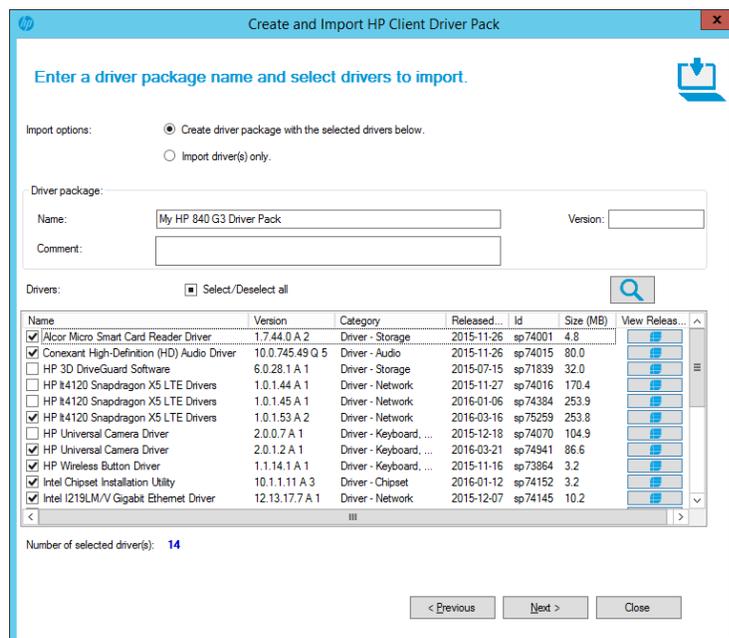
To import drivers to auto apply or to create a driver pack later, select the **Import driver(s) only** import option. By default, the **Driver category** for imported drivers is **HP Client Driver**. Select a different driver category, if necessary.

Figure 4. Create and Import HP Client Driver Pack wizard—Import driver(s) only
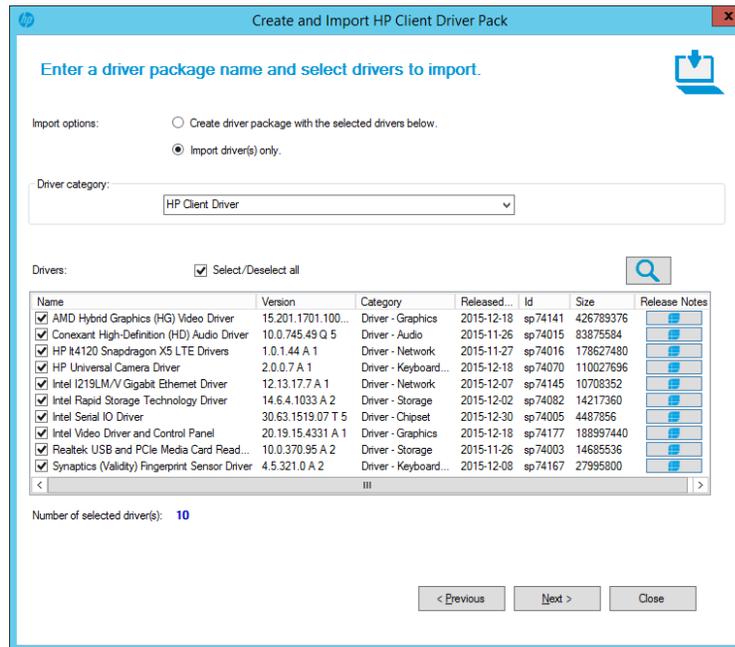
9. Click **Next**.

10. If you are creating a driver package, configure the distribution points and network shares as follows.

A. Select the necessary **Distribution point(s)** to assign the driver pack to specific destinations. Cloud distribution points are not supported.

B. Select the location for Configuration Manager to save the **Drivers** and **Driver package(s)**. Ensure that the specified locations have sufficient rights to be accessed by all necessary user accounts.

Figure 5. Selecting distribution points, network shares, and other settings to create a driver pack
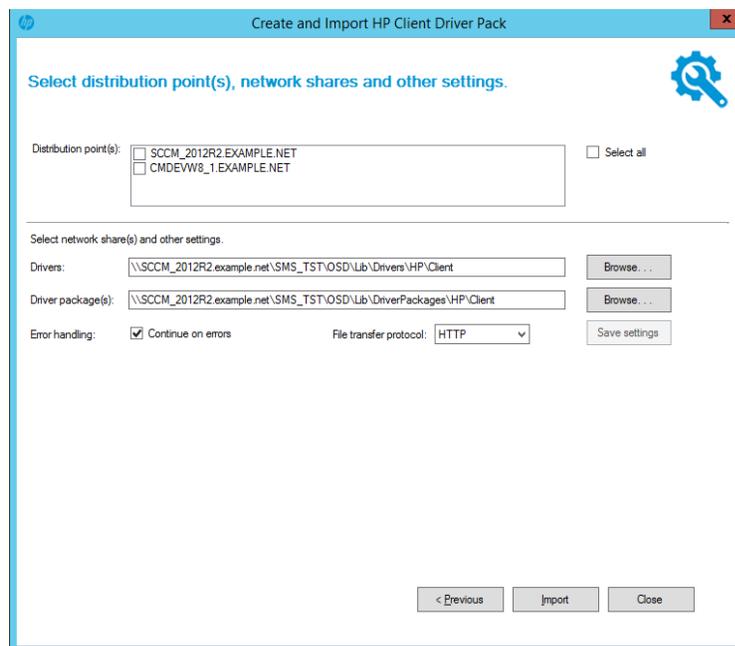
– or –

If you are importing drivers only, configure the network shares as follows.

A.   Select the location for Configuration Manager to save the **Drivers**. Ensure that the specified location has sufficient rights to be accessed by all necessary user accounts.

Figure 6. Selecting network shares and other settings to import drivers
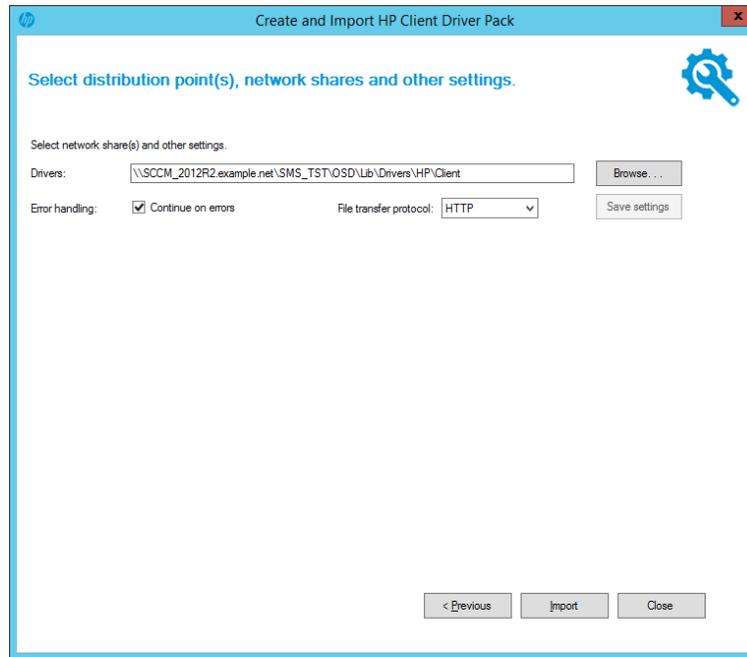
11.   If you require the importation to stop when an error is encountered, clear the **Continue on errors** check box. By default, this box is selected. When multiple drivers are selected, the next selected drivers are imported if the current driver fails to import.

12.   By default, CIK uses Hypertext Transfer Protocol (HTTP) to download the selected drivers. If necessary, select **FTP**.

13.   Any change to the settings in **Select network share(s) and other settings** enables the **Save settings** button. This button saves the settings for subsequent driver and driver package creation or import procedures.

Selecting HP products to obtain HP driver packs

CIK version 2.3 and higher offers a Download and Import Driver Packs menu item that displays a list of HP products with driver packs.

1.   In the Configuration Manager console, select **Software Library**, expand **Overview > Operating Systems**, and then select **Driver Packages**.

2.   In the **HP Client PCs** section of the ribbon menu, select **Download and Import Driver Packs**.

3.   Select an operating system from **Operating system** dropdown list. The **Available products** field displays the products that support driver packs.

4.   Optionally, enter keywords into the **HP product name** field and press **Enter** to filter the list of available driver packs.

5.   Select the desired driver packs for the targeted operating system deployment, and then click the right arrow button to add the products to the **Selected products** list. The associated driver packs of the selected products are displayed in the **Available driver packs** list.

6.   Optionally, select distribution points to assign the imported driver packs to a specific destination. However, cloud distribution points are not supported.

7.   If desired, change the default location for Configuration Manager to save the drivers and driver package. Ensure that the specified location has sufficient rights to be accessed by all necessary user accounts.

Any change to this path or other settings enables the **Save settings** button. This button saves the settings for subsequent driver package download and import procedures.

8.   Deselect the **Continue on errors** checkbox, if the driver pack download and import process must stop when an error is encountered. By default, this box is checked. When multiple driver packs are selected, the process continues to the next selected driver pack if the download and import of the current driver pack fails.

9.   By default, CIK uses HTTP to download the driver packs. If necessary, select **FTP**.

10. Select **Download and Import** to start the driver pack download and import process.

Note
Only use the **Reset Form** button to clear all the current selections.

Figure 7. Download and Import HP Client Driver Packs
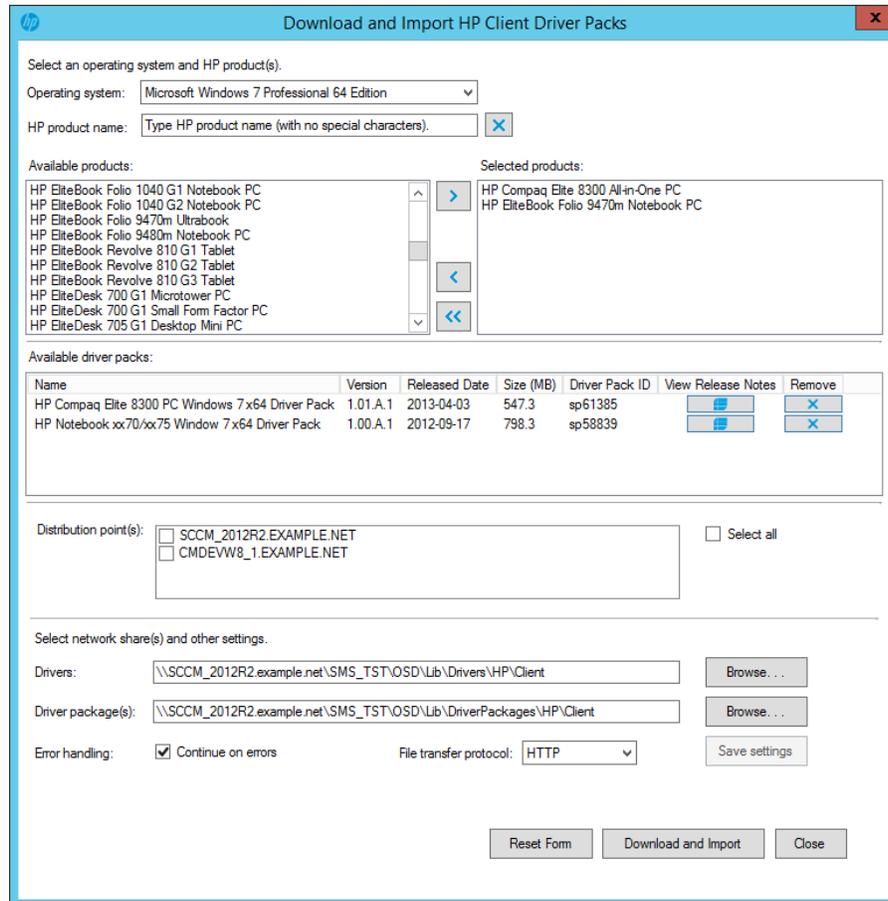
During the download and import process, a dialog displays the current operation and progress. The process downloads the selected driver packs and imports them into Configuration Manager. If one or more selected driver packs already exists in Configuration Manager, the process prompts the user to skip or overwrite the existing driver packs.
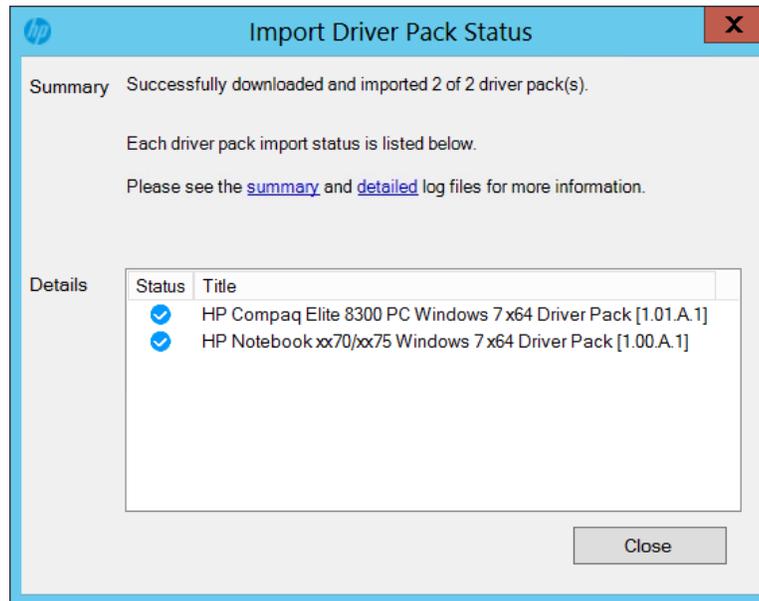
After the process is complete, a summary of the import status of each driver pack is displayed.

Figure 8. Import Driver Pack Status

The imported driver packs are created in **Driver Packages > HP Client Driver Packages**. Before the imported driver packs can be used in a task sequence, they need to be pushed out to the distribution points. If no distribution points were selected in the download and import dialog or if additional distribution points are needed, select each imported driver pack, select **Distribute Content**, and then follow the onscreen instructions to push the driver packs to the desired distribution points.

Note
This process requires a continuous internet connection to ftp.hp.com. If the driver pack information cannot be retrieved from ftp.hp.com on the device with the Configuration Manager console, open a browser session to verify the connection, and then try to complete the process again.
If there is no internet connection to ftp.hp.com from the device with the Configuration Manager console, obtain the HP driver packs via one of the following methods and use the **Import Downloaded Driver Pack** menu item instead.

Obtaining HP driver packs

There are several ways to obtain driver packs:

- HP Client Management Solutions website
- HP website product pages
- HP SoftPaq Download Manager (SDM)

To obtain driver packs using the HP Client Management Solutions website:

1. Go to http://www.hp.com/go/clientmanagement.
2. Select **HP CMS Download Library**.
3. Scroll down the list and look for **HP Driver Pack Matrix**.
4. Select the link to the list of 32-bit or 64-bit driver packs, depending on the target operating system.
5. Locate the appropriate product type and model names of the target devices and download the appropriate driver pack for the target operating systems.

To obtain driver packs using HP website product pages:

1. Go to http://www.hp.com/support.
2. Select **Support > Download drivers**.
3. Under **Find by product**, type the model of the target client and select **Go**.
4. Select the model from the list.

5. Select the target operating system/architecture from the list.
6. On the **Drivers & Software** page, under the category **Manageability – Driver Pack**, download the appropriate driver pack.

Note

WinPE driver packs listed on the download page are used only for the creation of HP client boot images.

To obtain driver packs using HP SDM:

1. Go to http://www.hp.com/go/clientmanagement.
2. Download and install HP SDM.
3. Select **Start > All Programs > HP > HP SoftPaq Download Manager**.
4. Select **Show software for all supported models**.
5. Use **English – International** as the target language.
6. Under **Product Catalog**, select the desired platform and operating system and then select **Find Available SoftPaqs**.
7. Download the driver packs from the category **Manageability – Driver Pack**.

Note

Not all driver packs available for download can be used with CIK. Driver packs listed under other categories such as **System – Software Management** cannot be imported with CIK.

To build custom driver packs using HP SDM (version 3.5.2.0 or higher):

1. Go to http://www.hp.com/go/clientmanagement.
2. Download and install HP SDM.
3. Select **Start > All Programs > HP > HP SoftPaq Download Manager**.
4. Select **Tools > Configuration Options**.
   A. On the **OS Filter** tab, select the **Win7**, **Win 8**, or **Win 8.1** operating system.
   B. On the **Language Filter** tab, select **English – International** as the target language.
   C. Click **OK**.
5. Select the **Build Driver Pack** tab.
6. In the Product Catalog window, click the plus sign (+) next to the desired product category to expand the category. Continue expanding until you find the desired product. Then, select the desired product by selecting the check box next to the product.
7. Select the desired platforms and operating systems, and then click **Find Available SoftPaqs**.
8. Select the desired SoftPaqs by selecting the check box next to each one.
9. In the Download SoftPaqs window, select the desired action from the drop-down menu next to the Download button:
   A. **Build CAB File**—Select this option if you are using Microsoft Deployment Toolkit or CIK in conjunction with Microsoft System Center Configuration Manager.
   B. **Build ZIP File**—Select this option if you are using CIK with Microsoft System Center Configuration Manager, or if you want to manually unpack and deploy the driver pack through another application.
10. Click **Download**.
11. The **End User License Agreement** screen is displayed for the first attempted download per session. If the EULA appears, click to accept the license and continue.
12. The Driver Pack Builder screen displays boxes for the Driver Pack Name, OS-Bitness, and Output directory. Provide the information as desired and then click **Build**.
13. A message is displayed indicating the Driver Pack build is complete. Click **OK.**
14. Navigate to the output directory to obtain the Driver Pack and associated logs.

Importing HP driver packs

15. In the Configuration Manager console, select **Software Library**, expand **Overview > Operating Systems**, and then select **Driver Packages**.

16. In the **HP Client PCs** section of the ribbon menu, select **Import Driver Pack**.

17. Under **Driver package**, select **Browse**, and then select the HP driver pack to be imported.

18. Optionally select distribution points to assign the imported driver packages to a specific destination. However, cloud distribution points are not supported.

    Change the default location for Configuration Manager to save the drivers and driver package, if desired. Ensure that the specified locations have sufficient rights to be accessed by all necessary user accounts. The location is saved automatically, per user, after a successful importation.

    Any change to this path or other settings enables the **Save settings** button. This button saves the settings for subsequent driver package download and import procedures.

19. Select **Import** to start the import process.

Figure 9. Import Downloaded HP Client Driver Pack
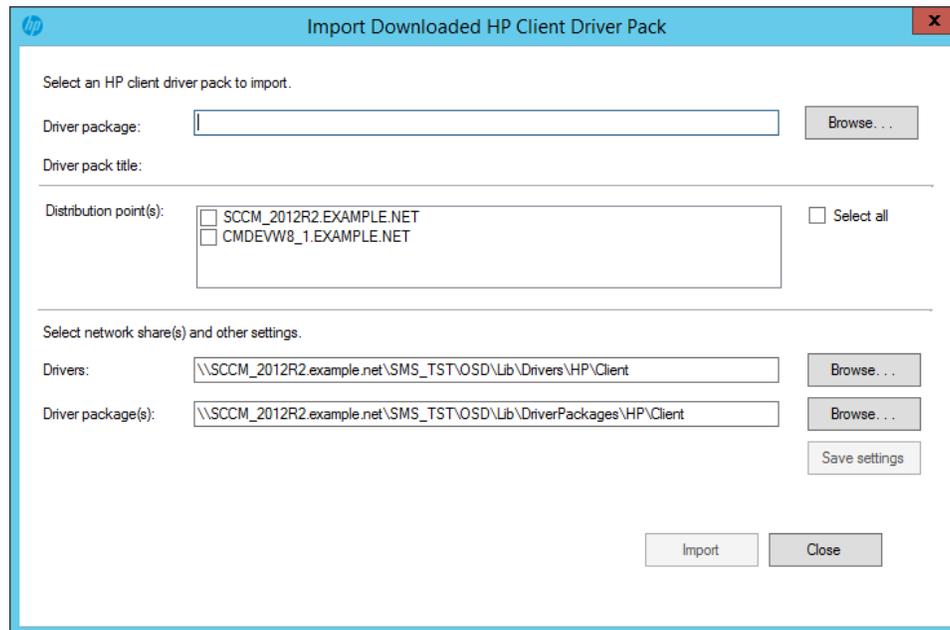
During the importation process, a dialog displays the current operation and progress.

After the importation process is complete, the imported driver pack is created in **Driver Packages > HP Client Driver Packages**. Before the imported driver pack can be used in a task sequence, it needs to be pushed out to the distribution points. If no distribution points were selected in the import dialog or if additional distribution points are needed, select the driver pack and select the **Distribute Content** menu item to begin the process.

HP client boot images

Obtaining a WinPE driver pack

1. Go to http://www.hp.com/go/clientmanagement.
2. Select **HP CMS Download Library**.
3. Scroll down the list and select **HP WinPE Driver Pack** to download a driver pack for WinPE.

Note

Not all platforms or configurations require the WinPE 4.0 driver pack, as WinPE 4.0 already contains many of the necessary hardware drivers needed to support OSD. It is recommended to create and use the WinPE 4.0 driver pack, as the added drivers do not impact systems or configurations that do not need them.

WinPE 5.0 natively supports HP commercial desktops, notebooks, and workstations shipping from 2011 to 2013. Platforms shipping in 2014 might require the WinPE 5.0 driver pack. The WinPE 5.0 driver pack cannot be used with WinPE 4.0, nor can the WinPE 4.0 driver pack be used with WinPE 5.0.

Because each version of Configuration Manager supports the customization or addition of drivers and components to a specific version of WinPE only, CIK Create Boot Image provides only limited support. For more information about the specific requirements for WinPE customization, go to http://technet.microsoft.com/en-us/library/dn387582.aspx.

Before a boot image is made available to a distribution point, Configuration Manager might use Windows Assessment and Deployment Kit (ADK), particularly DISM.exe, to inject drivers to a boot image. DISM might fail to appropriately recognize the signature of some boot-critical drivers added to the boot image because DISM has certain requirements that depend the version of ADK and the operating system. For more information, go to http://technet.microsoft.com/en-us/library/hh825070.aspx.

The CIK Create Boot Image feature leverages the Configuration Manager and ADK customization support for boot images, so the limitations of CIK are dependent on the Configuration Manager version, the ADK version, and the operating system version of the site server.

Importing a WinPE driver pack and creating boot images

To create a boot image:

1. In the Configuration Manager console, select **Software Library**, expand **Overview > Operating Systems**, and then select **Boot Images**.
2. In the **HP Client PCs** section of the ribbon menu, select **Create Boot Image**.
3. Under **HP client WinPE driver pack**, select **Browse**. Select the HP WinPE driver pack targeted for importation. Starting with CIK 2.4 and later, CIK will only show the boot images appropriate for the selected WinPE driver pack and supported for customization by Configuration Manager.
4. Change the default locations for Configuration Manager to save the drivers, the driver package, and the boot images, if desired. Ensure that the specified locations have sufficient rights to be accessed by all necessary user accounts.
5. Select the base boot images to use, and then select **Create** to create boot images with drivers from the selected HP WinPE driver pack.
6. Optionally, select distribution points to assign the boot images to a specific destination. However, cloud distribution points are not supported.

   Change the default location for Configuration Manager to save the drivers and driver package, if desired. Ensure that the specified locations have sufficient rights to be accessed by all necessary user accounts. The location is saved automatically, per user, after a successful importation. Any change to this path or other settings enables the **Save settings** button. This button saves the settings for subsequent boot image creation and driver or driver pack import procedures.

Figure 10. Create HP Client Boot Image(s)
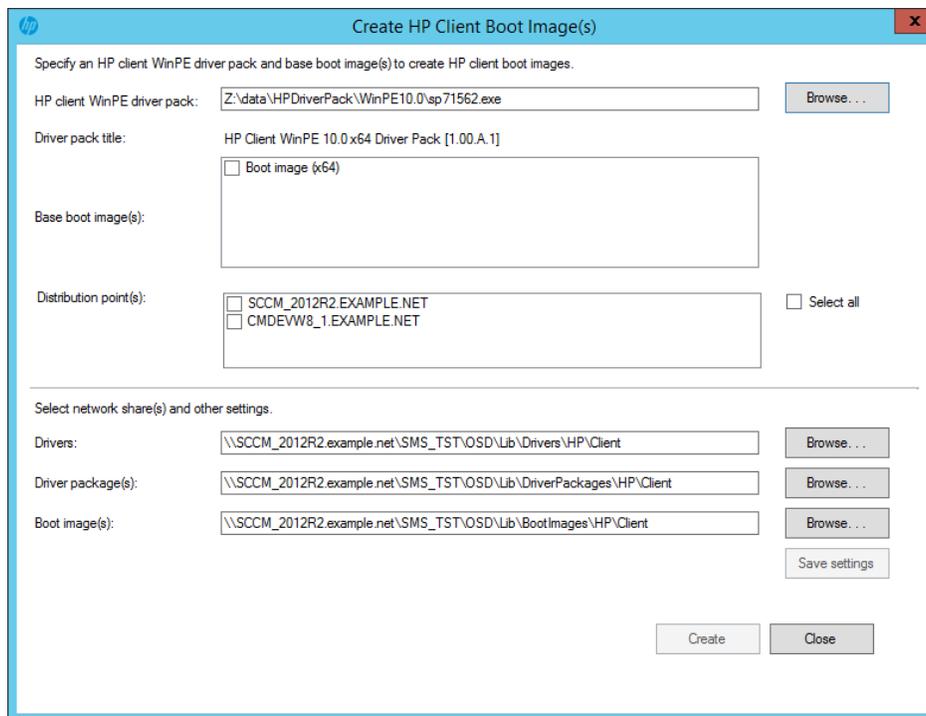
Depending on the architecture of the base image and the architecture supported by the Window Preinstallation Environment boot image, x86 and/or x64 images are created. HP Windows Preinstallation Environment driver packs for Windows 10 contain drivers for 64-bit boot images. Windows Preinstallation Environment driver packs for previous versions of Windows contain drivers for both 32- and 64-bit boot images.

After the process is complete, the new boot images are created in **Boot Images > HP Client Boot Images**.

To access the command prompt during the WinPE portion (F8) for debugging purposes:

1. Right-click the image and select **Properties > Customization**.
2. Select the box **Enable command support (testing only)**.

Before these boot images can be used in a task sequence, the boot images need to be pushed out to the distribution point. If no distribution points were selected in the Create HP Client Boot Image dialog or if additional distribution points are needed, or if there is a change to the boot image properties, select the boot image and then select the **Distribute Content** menu item to begin the process.

HP client task sequences

Creating a deployment task sequence

1. In the Configuration Manager console, select **Software Library**, expand **Overview > Operating Systems**, and then select **Task Sequences**.
2. In the **HP Client PCs** section of the ribbon menu, select **Create Deployment Task Sequence**.
3. Select a template from the **Task Sequence Template** drop-down box. These following examples show how to reference HP tools to aid with the deployment process.
4. Fill in the boxes as instructed.
5. Optionally, clear the box to include **BitLocker Drive Encryption** (BDE) steps if you do not plan to use Microsoft BDE. For more information on Configuration Manager BDE steps, go to https://technet.microsoft.com/en-us/library/hh846237.aspx,

6. Select **Create** to create a basic, bare metal deployment task sequence for HP client systems. A message box displays confirmation of the successful creation of the task sequence.

Figure 11. Task-sequence creation dialog
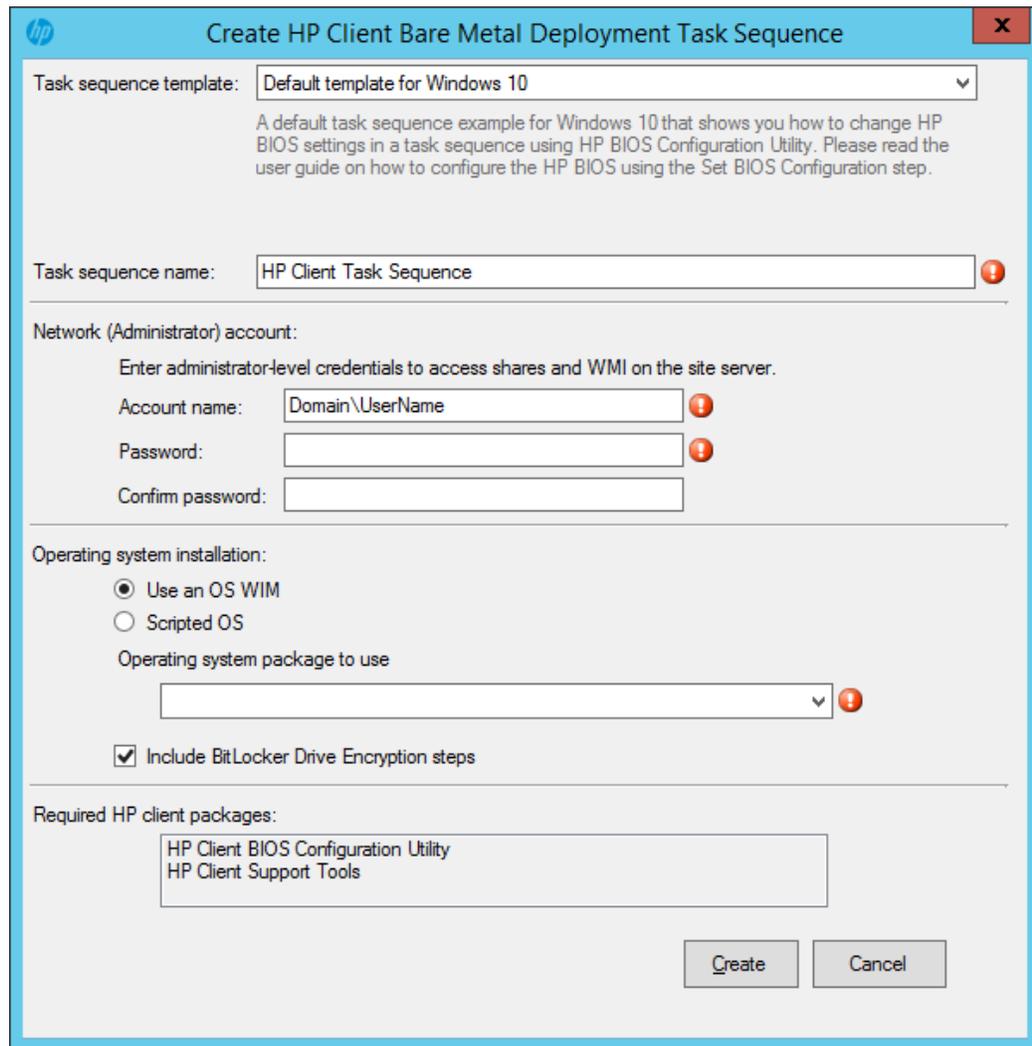
Important

Depending on the selected template, some of the steps in the created task sequence are **destructive**, including the following:

- Remove Disk Partitions (diskpart clean)
- Format and Partition Disk
- Call Intel® RSTCli Utility – Delete All Metadata
- Call Intel RSTCli Utility – Configure RAID Volume

HP recommends creating task sequences and testing them thoroughly in a test environment prior to any production deployments. HP is not responsible for any data loss caused by the created task sequences.

Configuring task sequences

Refresh the list of task sequences to see the created task sequence. Before using the task sequence, additional configuration must be performed for the task sequence to successfully execute. The template **Configure RAID Example** contains specific steps that are discussed in Using the Configure RAID Example.

Configuring task sequence steps

Note

Ensure that the target platform's driver pack has been imported as shown in HP client driver packs.

To begin configuration, right-click the task sequence and select **Edit**. The following figure is a task sequence created by the **Default Template for Windows 7 or Windows 8**. This task sequence can be used with either Windows 7 or Windows 8. There is also the **Default Template for Windows 10**. The default disk partition configuration in the templates is different. For Windows 10, the recommended Windows recovery tool partition is at the end of the drive; in previous versions of Windows, it was at the beginning. The default partition takes up 1% of the disk space. Change this value to your Windows recovery image size, usually at least 500 megabytes (MB).

Figure 12. Steps of a **Default Template** task sequence
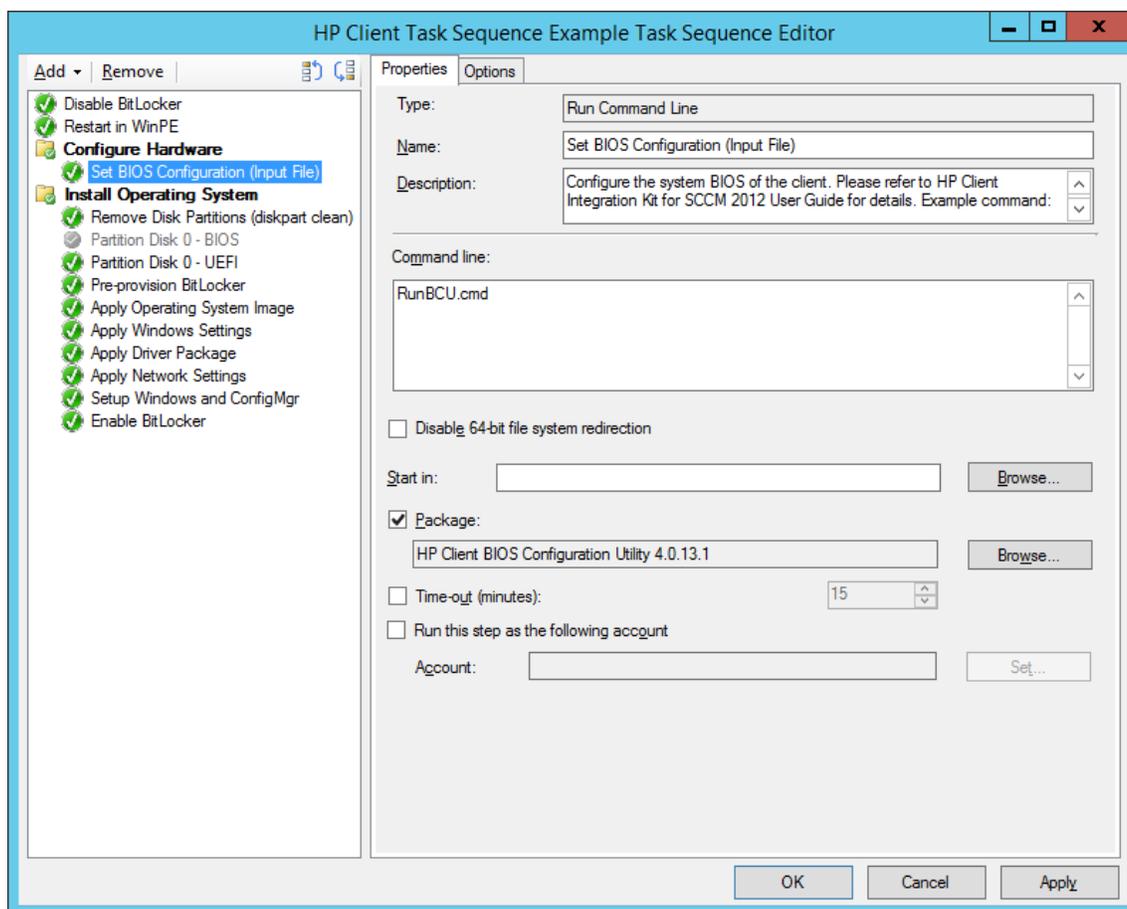
Depending on the target operating system of the deployment, some or all of the following steps need to be configured:

- **Set BIOS Configuration (Input File)**—This step allows the setting of BIOS settings via **HP BIOS Configuration Utility** (BCU). The Trusted Platform Module (TPM) must be turned on and initialized before it can be used. See the section Configuring the Set BIOS Configuration task step for more details.
- **Remove Disk Partitions (diskpart clean)**—This step does not need configuration; however, for the task sequence to run properly on all disk scenarios, the deployment and all packages and content within it need to be configured to allow access to the content directly from the network. See Allowing access to deployment content for more info. If this step is not needed, disable the step.
- **Format & Partition Disk**—Enable the appropriate step to format and partition the disk to your need. For example, if deploying to a system that is set to UEFI or UEFI Hybrid (with CSM), enable the EFI format step and be sure that the BIOS format step is disabled.
- **Apply Driver Package**—Select the HP driver package imported for the target platform and operating system.
- **Apply Network Settings**—Select the workgroup or domain options for your deployment and enter the correct account information for the task sequence to join an Active Directory domain, if necessary.

There are additional task sequence steps that will need to be configured; review each task sequence step and set parameters as needed.

After all task sequence steps have been configured, select **OK** or **Apply** to save changes. The task sequence can now be modified, and task sequence steps can be added as needed to perform your desired operations.

Assigning a boot image
Assign a boot image to the task sequence using the following steps:

1. Right-click the task sequence and select **Properties**.
2. Select the **Advanced** tab and select **Use a Boot Image**.
3. Select **Browse** and select the appropriate boot image from the **HP Client Boot Images** folder.

Note
Select the boot image with the same architecture as the operating system being deployed (for example, an x86 image for an x86/32-bit operating system and an x64 image for an x64/64-bit operating system).

Allowing access to deployment content
To run properly, the **Remove Disk Partitions (diskpart clean)** step in the CIK task sequence needs to be run directly from the network. For this to happen, all packages and content in the task sequence (including the boot image) need to be configured as follows:

1. Right-click the content/package and select **Properties**.
2. Select the **Data Access** tab, and select **Copy the content in this package to a package share on distribution points**.
3. Select **OK**.

When deploying this package, the **Access content directly from the distribution point** option can be selected on the Distribution Points step of the wizard.

If this step is not needed, or if you wish to use the download content setting, disable this task sequence step. If you still need to be able to run this step when the **Download content locally** option is selected, see The Remove Disk Partitions (diskpart clean) step is needed, but I cannot use the Access Content Directly option for possible workarounds.

After the task sequence has been modified and amended as needed, deploy to the target collection and distribute content as needed to use the task sequence. Follow the instructions in the wizards to complete this process.

Note
If you are targeting a device running Windows XP, the task sequence must be updated to have the appropriate legacy partition. Also, the mass storage driver must be selected in the **Apply Driver Pack** step. See Appendix A—List of supported mass storage drivers for Windows XP for more details.

Using the Configure RAID Example template

Preparing the boot image used by the task sequence
1. Make sure that the boot image has the necessary drivers as shown in Importing a WinPE driver pack and creating boot images.
2. Remove any existing Intel Rapid Storage Technology (Intel RST) RAID drivers to avoid any conflict with the driver added in the following step.
3. Add the appropriate version of the **Intel Rapid Storage Technology RAID Driver** that supports the target client systems to the boot image.

Preparing the packages used by the task sequence
1. Ensure that the target platform's driver pack has been imported as shown in HP client driver packs.
2. Download the **Intel Smart Response Technology Command Line Interface Deployment Tool** (Intel RSTCli) that supports the target client systems from the Intel Download Center. Go to https://downloadcenter.intel.com, and then search for **Smart Response Technology Command Line Interface Deployment Tool**. Locate the tool version that matches the driver version, and follow the on-screen instructions to download it.

Note

The major version and minor version values of the driver and the command line tool must match.

For example, the command line tool version 12.8.* works with the driver version 12.8.*.

3. Examine the downloaded file, and unzip it and its content. The file might contain zip files for the 64-bit and 32-bit binaries of the tool. Those also need to be extracted.

4. Copy the extracted files and folders of the command line tool to the desired location to be the source of the software package for this tool. Create a software package that references the source location.

Configuring task sequence steps

To begin configuration, right-click the task sequence and select **Edit**. The following figure is an example of the steps of a task sequence created by the **Configure RAID Example** template.

Figure 13. Steps of a **Configure RAID Example** task sequence
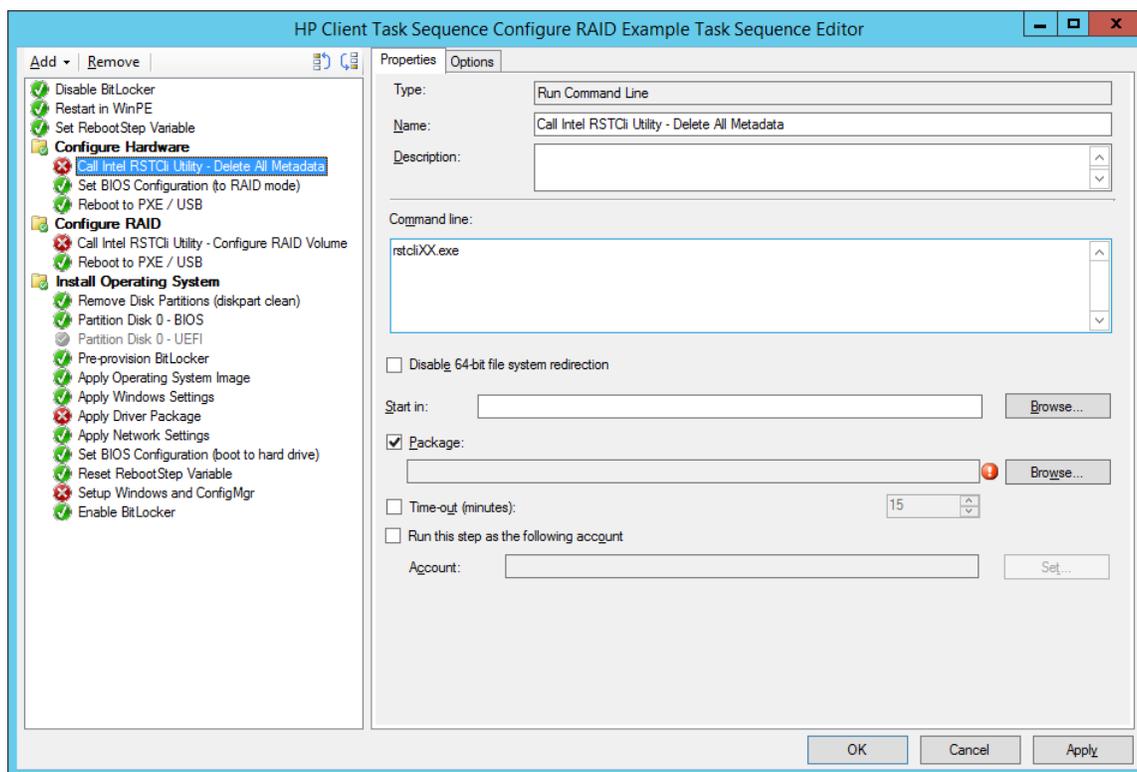
The following steps need to be configured:

- **Call Intel RSTCli Command Line Utility – Delete All Metadata**—This step removes all previously configured disk metadata.
    - A. Replace the command: The command line in the step, **rstcliXX.exe**, is just a placeholder. Read the utility documentation carefully and replace the placeholder command with the actual command. The package containing the command line utility in the preparation step earlier needs to be selected in this step. The following is an example of the command line:

        ```
        IntelRSTCli\12.8\x64\rstcli64.exe --manage --delete-all-metadata
        ```

        In this example command, **IntelRSTCli\12.8\x64** is the relative location from the source folder to the actual command line utility in the content of the package.
    - B. Select the Intel command line tool package prepared earlier.
- **Set BIOS Configuration (to RAID mode)**—This step allows the setting of BIOS settings via **HP BIOS Configuration Utility (BCU)**. See Configuring the Set BIOS Configuration task step for more details.

- **Call Intel RSTCli Command Line Utility – Configure RAID Volume**—This step configures the RAID volume on the target client.
  - A. Replace the command: Like the step to delete all metadata, the command line in the step, **rstcliXX.exe**, is just a placeholder. See the utility documentation and replace the placeholder command with the actual command. The package containing the command line utility needs to be selected. The following is an example of the command line to configure RAID level one (mirror) with hard drives:

    ```
    IntelRSTCli\12.8\x64\rstcli64.exe --create --level 1 –n Volume 0-0-0-0 0-1-
    0-0
    ```

    Again, **IntelRSTCli\12.8\x64** is the relative location from the source folder to the actual command line utility in the content of the package.
  - B. Select the Intel command line tool package prepared earlier.
- **Remove Disk Partitions (diskpart clean)**—This step does not need configuration; however, for the task sequence to properly run on all disk scenarios, the deployment and all packages and content within it need to be configured to allow access to the content directly from the network. See Allowing access to deployment content for more info.
- **Format & Partition Disk**—By default, the task sequence has the BIOS (legacy/MBR) format step enabled and the EFI (GPT) step disabled. If deploying to a system that is set to UEFI or UEFI Hybrid (with CSM), enable the EFI format step and disable the BIOS format step.
- **Apply Driver Pack**—Select the HP driver pack imported for the target platform and operating system.
- **Require Reboot to PXE/USB**—Because this task sequence requires one or more immediate reboots in the WinPE when the disk has not been defined yet, the RebootStep variable is used to control the flow of the task sequence.

Review each task sequence step and set parameters as needed for the rest of the task steps. If these steps do not work, verify that you entered the correct network credentials in the task sequence creation dialog.

After all task sequence steps have been configured, select **OK** or **Apply** to save changes. The task sequence can now be modified and task sequence steps can be added as needed to perform your desired operations.

Assigning a boot image

Assign a boot image to the task sequence using the following steps:

1. Right-click the task sequence and select **Properties**.
2. Select the **Advanced** tab and select **Use a Boot Image**.
3. Select **Browse**, and then select the appropriate boot image that had the Intel RST RAID driver added during the boot image preparation.

Note

Select the boot image with the same architecture as the operating system being deployed (for example, an x86 image for an x86/32-bit operating system and an x64 image for an x64/64-bit operating system).

Allowing access to deployment content

To run properly, the **Remove Disk Partitions (diskpart clean)** step in the CIK task sequence needs to be run directly from the network. For this to happen, all packages and content in the task sequence (including the boot image) need to be configured as follows:

1. Right-click the content/package and select **Properties**.
2. Select the **Data Access** tab, and select **Copy the content in this package to a package share on distribution points**.
3. Select **OK**.

When deploying, the **Access content directly from the distribution point** option can be selected on the Distribution Points step of the wizard.

After the task sequence has been modified and amended as needed, deploy to the target collection and distribute content as needed to use the task sequence. Follow the instructions in the wizard to complete this process.

Understanding the task sequence execution flow

The task sequence is divided into three task groups—Configure Hardware, Configure RAID and Install Operating System.

Conditions on the three groups and a computer variable are used to control the processing of the task sequence across multiple reboots over PXE/USB. The Set RebootStep Variable task increments the RebootStep variable by one (1) each time it is executed. If the variable is not present, it is created and set to 0 before being incremented.

During the initial execution of the task sequence, the tasks in the Configure Hardware group are executed. After rebooting and re-executing the task sequence, the Set RebootStep Variable task increments RebootStep to two (2). Because the Configure Hardware group has the condition that it only runs when the value of the RebootStep variable is one (1), this group is skipped after the reboot. The next group, Configure RAID Volume, looks for a RebootStep value of two (2), then it is executed. The last group, Install Operating System, looks for a RebootStep value of three (3). If this condition is met, the third group of steps runs.

Towards the end of the task sequence, the Reset RebootStep Variable task resets RebootStep to zero (0).

Note the following additional points about deploying a task sequence:

- When deploying a task sequence with reboot to PXE/USB, on the Distribution Points screen, set the deployment options to **Access content directly from a distribution point when needed by the running task sequence**. For this option to be available for each package referenced by your task sequence, go to the **Data Access** tab of the package **Properties**, and select **Copy the content in this package to a package share on distribution points**.
- If the task sequence is deployed as **Available** and not as required, the task sequence must be selected upon reboot for deployment to be continued.
- The target client system should have the appropriate boot order set for reboots for this step to work properly. (That is, if booting via PXE, the PXE NIC should be before any other boot devices in the boot order.)
- To rerun a required task sequence on a target client system, clear the PXE advertisement:
  - In the Configuration Manager console, select **Assets and Compliance workspace**.
  - Select **Devices**.
  - Select the target client system.
  - Select **Clear Required PXE Deployments** on the ribbon.
- If the task sequence failed to run completely, it might be necessary to clear or reset the **RebootStep** variable as follows:
  - Right-click on the target client system and select **Properties**.
  - Select the **Variables** tab.
  - Select the **RebootStep** variable, and then select the delete button with the X-like icon.

Reference

Configuring the Set BIOS Configuration task step

The **Set BIOS Configuration (Input File)** task step allows the configuration of BIOS settings on platforms managed by HP. This Run Command Line task uses the **HP Client BIOS Configuration Utility** package.

Figure 14. HP Client Hardware Configuration Task

This task sequence step is run with the following command line:

```
RunBCU.cmd <parameters to pass to BCU>
```

For a list of parameters and options, see Command-line switches and examples.

This action applies the BIOS settings specified in the selected REPSET file and/or executes specified command line options. The batch file calls the appropriate version of BCU depending on the architecture of the current operating system.

An example REPSET file is included with the package; \ located in the **Config** folder of the package source folder and named **BCUSettingExampleOnly.REPSET**. If this REPSET file is used in this task step, the command line is as follows:

```
RunBCU.cmd /setconfig:"Config\BCUSettingExampleOnly.REPSET"
```

It is recommended to locate the REPSET file in the source folder or subfolder of the package so that it can be easily referenced in the command line.

Adding and editing configuration files

To add a new configuration file, do the following:

Obtain the configuration file from the target platform and edit the file. Set the desired values. Remove settings and values from the configuration file that are not required to be applied through this configuration. See Obtaining and editing a BIOS configuration (REPSET) file for guidance.

1. Obtain the package source folder location of BCU. The package is located in the Software Library at **Overview > Application Management > Packages > HP Client Support Packages**.
2. Select the source folder location and copy the REPSET file to the folder.
3. Update distribution points so that the REPSET file is made available to the task sequence.

Notes and warnings

Be aware of the following when using this task sequence step:

- After making changes or adding a configuration file to the package folder, be sure to update the **HP Client BIOS Configuration Utility** package to the distribution points to ensure that the new configuration files are available for the task sequence.
- Some BIOS setting changes might not take effect until after a restart of the target client; a restart might be needed to ensure all settings apply.
- Changing certain BIOS settings might cause task sequences to fail to complete. Be sure to test the desired BIOS configuration file before deploying the task sequence widely.
- Certain characters used in BIOS passwords might require special escaping to work properly; see the *HP BIOS Configuration Utility User Guide* included with the CIK for details.

For more information, see HP BIOS Configuration Utility (BCU).

Uninstalling CIK

Uninstall CIK via **Programs and Features** in the Windows Control Panel.

Imported driver packages, created boot images, and task sequences remain on the server. The supporting client packages and source files will be removed; however, the source folder for BCU is not removed to preserve BIOS configuration files located in the folder.

Refreshing task sequence references

Task sequence references might need to be refreshed if one of the following applies:

- CIK was uninstalled and then reinstalled.
- Some or all of the HP Client Support Packages (as shown in Figure 1) were deleted and reinstalled using the Repair option in the installer.

To refresh the references, open the task sequence for editing (right-click the task sequence and select **Edit**), and follow the instructions in the Action column.

Table 1. Task sequence step refresh action

Task sequence step	Action
Set BIOS Configuration (Input File)	Select the package **HP Client BIOS Configuration Utility** in the folder **HP Client Support Packages**.
Remove Disk Partitions (diskpart clean)	Select the package **HP Client Support Tools** in the folder **HP Client Support Packages**.

Updating CIK

CIK can be updated by running the newer version's setup file. Existing imported driver packs, created boot images, task sequences, and BIOS configuration files are carried over to the newer version of the plugin and still useable. Updated support packages, however, need to be pushed out to the distribution points for the newer version to be used.

HP BIOS Configuration Utility (BCU)

The BCU is a free utility that enables you to do the following:

- Read available BIOS settings and their values from a supported desktop, workstation, or notebook computer
- Set or reset Setup Password on a supported desktop, workstation, or notebook computer
- Replicate BIOS settings across multiple client computers

Command-line switches and examples

The following is a list of common command-line switches that can be used with BCU.

Table 2. List of command-line switches for BCU

Command	Result

`/Get:"filename"`
—or—
`/GetConfig:"filename"`
	Gets the configuration data and stores it in the specified file.
	Note: If "filename" is empty, BCU writes the configuration data to the output console.

`/Set:"filename"`
—or—
`/SetConfig:"filename"`
	Modifies the system BIOS configuration using the data in the specified file. Accepts only REPSET formatted files.

`/cspwdfile:"filename"`
—or—
`/CurSetupPasswordFile:"filename"`
—or—
`/cpwdfile:"filename"`
	Specifies the current BIOS Setup Password by providing the path and file name to a password file. If a BIOS setup password is set, provide a password file containing the current password when changing BIOS settings or password. **HP Password Utility** must be used to generate the password file. For more information about the password utility, see <u>HP Password Utility</u>.
	Note: This parameter requires BCU version 3.0.1.1 or later.
	Note: If using a BCU version earlier than 4.0.1.1, use /cspwdfile:"filename".

`/nspwdfile:"filename"`
—or—
`/NewSetupPasswordFile:"filename"`
—or—
`/npwdfile:"filename"`
	Specifies a new BIOS Setup Password by providing the path and file name to a password file. Only one new password file can be provided. To remove the password on a target system, use an empty string for the file path name:
	`/npwdfile:""`
	Again, **HP Password Utility** must be used to generate the password file. For more information about the password utility, see <u>HP Password Utility</u>.
	Note: This parameter requires BCU version 3.0.1.1 or later.
	Note: If using a BCU version earlier than 4.0.1.1, use /nspwdfile:"filename".

`/?` or `/Help`	Displays a help message.
`/SetDefaults`	Sets BIOS settings to their default values. **Note:** `/SetDefaults` does not change every possible value, nor does it change settings on an individual basis.
`/verbose`	When used with `/Set`, displays the details about each setting, such as success, the reason for not applying the setting (warning), or the failure code (error).
`/WarningAsErr`	Same as /Verbose, except any settings not applied due to warnings will cause BCU to return program error code 13 instead of success. **Note:** Requires BCU 3.0.11.1 or later. When both `/verbose` and `/WarningAsErr` are used, `/WarningAsErr` will take precedence.
`/Unicode`	Checks platform support for Unicode passwords only. If not supported, returns error code 32. Use only in batch files; this command is not compatible with othercommands. **Note:** Requires BCU version 4.0.1.1 or later.
`/log`	Generates the log folder and log file default to the executable folder **Note:** Requires BCU version 4.0.1.1 or later
`/getvalue`	Gets the value of a given setting without using a config file. Example: `BCU.exe /getvalue:"Asset Tracking Number"` **Note:** Requires BCU version 4.0.1.1 or later
`/setvalue`	Sets the value of a given setting without using config file. Example: `BCU.exe /setvalue:"Asset Tracking Number","12345678"` **Note:** Requires BCU version 4.0.1.1 or later

Table 3. Example BCU command-line usage and meaning

Example command and parameters	Result
`<batch file or exe>` `/GetConfig:"computerconfig.repset"`	Gets the BIOS configuration of the machine and stores it in "computerconfig.repset".
`<batch file or exe>` `/SetConfig:"Config\myconfig.repset"`	Applies the BIOS configuration in "Config\myconfig.repset".

`<batch file or exe>`
`/SetConfig:"Config\myconfig.repset"`
`/nspwdfile:"Config\mypassword.bin"`
	Sets the new BIOS password to the one provided in the specified file and then applies the BIOS configuration in "Config\myconfig.repset". This parameter combination can be used when no BIOS password is set on the target clients.

`<batch file or exe>`
`/SetConfig:"Config\myconfig.repset"`
`/cspwdfile:"Config\myoldpassword.bin"`
`/nspwdfile:"Config\mynewpassword.bin"`
	Changes the existing BIOS password contained in the file "myoldpassword.bin" to the new one in "mynewpassword.bin" and then applies the BIOS configuration in "Config\myconfig.repset".

`<batch file or exe>`
`/SetConfig:"Config\myconfig.repset"`
`/cspwdfile:"Config\mypassword.bin"`
	Applies the BIOS configuration in "Config\myconfig.repset", supplying the needed BIOS password in the file "Config\mypassword.bin".

BCU operations that change password-protected BIOS settings require the use of either the /cspwdfile or the /CurSetupPasswordFile switch and the location of the file containing the current BIOS password.

The version of BCU included with CIK includes a batch file (RunBCU.cmd) that automatically detects the current operating system and runs the correct version of BCU (32- or 64-bit).

Important
Target clients of a task sequence must have access to the location of the password files during the deployment process if the password files are specified on the command line to run BCU during a task sequence.

Obtaining and editing a BIOS configuration (REPSET) file

To obtain the configuration of the system for use in Configuration Manager:

1. Run BCU with the `/GetConfig` option as shown in Table 2 on the target platform. The created file is known as a REPSET file; which typically has the extension **.repset**.

Figure 9. REPSET file format

```
BIOSConfig 1.0
Configuration Option 1 Single Option
        *Selected Option
        Another Option
        Yet Another Option
Configuration Option 2 List (like boot order)
        1st device
        2nd device
        3rd device
```

2. Remove the configuration items that either do not need to be changed or are information items.
   - To remove a configuration item, remove the option name and all tabbed lines following it to the next untabbed line.
   - The first line ("BIOSConfig", or "English" if necessary for backwards compatibility) must be present and unmodified. Deleting or moving it prevents successful configuration of the BIOS, and BCU fails when attempting to use the REPSET file.

Figure 10. Example REPSET file trimmed down to the settings being changed

```
BIOSConfig 1.0
Removable Media Boot
       *Enable
       Disable
Boot Order
       Optical Drive
       USB device
       Hard Drive
       Ethernet controller
       Diskette Drive
       PnP Device #2
       PnP Device #3
       PnP Device #4
       PnP Device #5
       PnP Device #6
       PnP Device #7
       PnP Device #8
       PnP Device #9
       PnP Device #10
       PnP Device #11
```

Before using BCU in a task sequence, test your REPSET file and/or the parameters to be used on a live device to ensure that the settings apply correctly and without issue.

For more info on using BCU, see the *HP BIOS Configuration Utility User Guide* included with CIK, the BCU download, or at http://www.hp.com/go/clientmanagement.

HP Password Utility

HP Password Utility is an application used for creating an encrypted password file that can be used with a BCU password file parameter. There is no installation required for this utility. It can be run from the command line or in graphical user interface mode as a standalone application. A version of this utility is included in the BCU package. To obtain the latest version, use the following procedure.

Obtaining and using the utility

1. Go to http://www.hp.com/go/clientmanagement.
2. Select **HP CMS Download Library**.
3. Scroll down the list and look for **BIOS Setup Password**.
4. Select the SoftPaq containing the utility to download.
5. Double-click the downloaded SoftPaq and follow the on-screen instructions to extract it to a folder.
6. Locate the extracted content and run the password utility.

Command-line options

Table 4. Command-line options for the HP Password Utility

Command	Result
No options	Runs the utility in graphical user interface mode.
/s	Runs the utility in command line mode.
/f"filename"	Provides a path and file name to save the encrypted password.
/p"password"	Specifies the password to encrypt.
/?	Shows help.

Troubleshooting

Before troubleshooting

Verify the following before proceeding with troubleshooting:

- Verify your task sequence settings. The primary cause of task sequence failures is related to the settings you provided in the task sequence steps. Be sure to check the task sequence steps for the following:
  - Valid environment or task sequence variable references.
  - Valid package references—You must ensure that all packages referenced in the task sequence are available from the distribution points and are up to date.
- Verify that the task sequence was created with the currently installed kit or a previously installed version that was updated. If the kit was uninstalled and then reinstalled, or an HP Client Support Package was removed but reinstalled via setup, the HP packages need to be selected again for the task sequence steps that use them. See this document for more information on updating task sequences with new package references.
- Verify that the downloaded driver packs are removed properly by CIK.
  - Driver packs downloaded by CIK are stored in **%TEMP%\hpdriverpack,** where %TEMP% is the environment variable defining the default application temporary location for the currently logged on user. CIK attempts to remove the downloaded driver packs after a successful import.
- Verify and examine log files.
  - Configuration Manager Console log files are located in the **AdminUILog** folder. This folder is located in the install directory of the Configuration Manager Console.
  - Log files generated by CIK are stored in **%TEMP%\hpclient,** where %TEMP% is the environment variable defining the default application temporary location for the currently logged on user.

    Extended logging information can be added to the kit log files by adding a debug flag to the registry. In the registry, add a DWORD value named **DebugLogging** and set the value to **1** for the applicable registry key:

    `HKLM\Software\Wow6432Node\HP\Client\ConfigMgr Integration Kit`
  - Additional applicable log files may be available in the Configuration Manager log folder (typically located at %ProgramFiles%\Microsoft Configuration Manager\Logs).

Common problems

The following are some common problems that might be encountered. If an issue is not listed here, the subsequent troubleshooting sections might provide answers.

Some drivers fail to be injected into the boot image

One of the instances when this might occur is when a driver is signed with a newer driver signing method than what DISM and the operating system support. In that case, the driver is treated as an unsigned driver and is not injected into the boot image. For example, when running SCCM 2012 SP1 on Windows Server 2008 R2, some Windows 8/8.1 drivers cannot be injected into a WinPE boot image. If the driver in question is not required for your environment, remove the driver from the boot image's driver list, and then manually re-inject the remaining drivers. For more details, go to Add and Remove Drivers Offline Using DISM.

A target platform boots to WinPE, but the task sequence doesn't start

There are several possible causes, as follows:

- There is no network connection because the network adapter is unsupported.
- There is no network connection because the boot image does not contain the necessary network driver.
- Configuration Manager does not recognize the target HP client platform.
- One or more of the packages referenced by the task sequence are not available.

To resolve this issue:

- Install a supported network adapter and set it as the PXE NIC.
- Use an HP Client WinPE image containing the appropriate HP WinPE driver pack.
- Ensure that the target HP client platform was imported into Configuration Manager with the correct identification information.
- Open the task sequence and fix any errors that might be present.

Updated or new BIOS configuration input files were not used or available during task sequence execution
Ensure that the **HP Client BIOS Configuration Utility** package was pushed to the appropriate distribution points.

A task sequence starts but fails to continue
There are several possible causes, as follows:

- A BIOS setting or BIOS configuration change prevents the system from correctly starting.
- The incorrect driver package was selected for the target platform.

To resolve this issue:

- Ensure that the correct driver package was selected for the given target platform.
- Ensure that all dependencies of the task sequence were distributed to distribution points or groups that the target clients or collections can access.

A task sequence fails to open for editing, or error messages appear when viewing certain task sequence steps
There are several possible causes:

- The plugin installation is uninstalled. (Error messages such as "There may be too many steps in the task sequence object" might appear.)
- The plugin installation is corrupted.
- CIK has not been installed on the primary site server.

To resolve this issue:

- Re-install the plugin to ensure that all necessary files are present and registered.
- Install CIK on the primary site server.
- Repair the plugin installation. This can be done either by running the setup again and selecting **Repair** or by selecting the **Repair** option in **Programs and Features** in the Control Panel.
- Recreate the task sequence in a new task sequence.
- For all of the above situations, it might be necessary to reselect the packages for some task sequence steps (Refreshing task sequence references).

Installation issues

An error occurred while installing a supporting package (HP Client BIOS Configuration Utility or HP Client Support Tools)
Ensure that the user account running the installer has permissions to access the Configuration Manager server and modify the data, or log on as a user that has those permissions.

CIK does not completely uninstall
Imported driver packs, created boot images, and task sequences created via CIK are not removed when the product is uninstalled. If they are no longer needed, they can be deleted from Configuration Manager.

A task sequence fails to run after re-installing and/or repairing the installation
When re-installing and/or repairing the installation, existing task sequences using packages installed by CIK are not automatically updated. To function correctly, task sequence references must be refreshed (see Refreshing task sequence references for details).

Driver pack issues

The console reports that the SoftPaq is not a valid driver pack, but the SoftPaq is a driver pack
Only driver packs with the category **Manageability – Driver Pack** can be imported with CIK. Other driver packs listed under other categories (such as **Software – System Management**) cannot be used with CIK.

While importing a driver pack, CIK fails to complete the import process while processing driver INFs
This might happen if an existing driver is detected but the driver source is missing. Ensure that the existing driver's source is present. If not, either delete the driver and reimport the driver pack or restore the missing driver source.

WinPE image creation issues

Some available boot images are not selectable as base boot images

Because each version of Configuration Manager supports the customization or adding drivers and components to a specific version of WinPE only, the CIK Create Boot Image feature can provide only limited support. For more information about the specific requirements for WinPE customization, go to http://technet.microsoft.com/en-us/library/dn387582.aspx.

If ADK and the operating system of your site server fail to appropriately verify the signature of some drivers during the boot image creation, you might get this CIK error:

```
Object version mismatch error; a ConfigMgr object has been modified or updated
before changes could have been saved. Please try the operation again.
```

If a retry attempt fails, manually customize or add the drivers to your boot image.

Task sequence creation/management issues

The error "There may be too many steps in the task sequence object" appears when attempting to edit a task sequence created by CIK

This error generally appears when CIK has been uninstalled from the server. The kit must be reinstalled to the server before the task sequence can be viewed or edited.

The Remove Disk Partitions (diskpart clean) step is needed, but I cannot use the Access Content Directly option

There are a number of workarounds that are possible, including the following:

- Use the **Connect to Network Folder** task sequence step to connect to the network share containing the package files, and use a **Run Command Line** task to run the step from the network share.
- Add the package files to the boot image and use a **Run Command Line** task to run the step, referencing the files in the boot image.

See Microsoft's documentation for details about how to perform these actions.

Task sequence execution issues

A system fails to boot using PXE

If the client machine is EFI x86 (IA-32), such as the HP ElitePad 900, then Cumulative Update 1 for Configuration Manager 2012 SP1 (KB2817245) must be installed for PXE boot to work successfully. Configuration Manager 2012 R2 does not need this update.

PXE is an extension of DHCP, which uses a broadcast type of communication. Broadcast communication uses standard timeout values that are not readily changeable. As a result, a computer waits for a default timeframe to receive a DHCP or PXE response before timing out and causing a failure condition. Each time a computer is rebooted, it must renegotiate the connection to the switch. Some network switches arrive configured with default settings that might cause connectivity delays. The settings on the switch might cause a DHCP or PXE timeout because they fail to negotiate a connection in time.

The following features might be affected by negotiation timeouts:

- **Spanning Tree Protocol (STP)**—STP is a protocol that prevents loops and provides redundancy within a network. A networking device using this algorithm might experience some latency as it collects information about other network devices. During this period of information collection, servers might boot to PXE and time out while waiting for a response from Windows Deployment Services. To prevent these issues, disable the STP or enable PortFast on end-node ports for the target server. For further information, see the manufacturer's documentation.
- **EtherChannel or Port Aggregation Protocol (PAgP)**—EtherChannel enables multiple links between devices to act as one fast link and share the load between the links. Running the EtherChannel Protocol in automatic mode might cause a connectivity delay of up to 15 seconds. To eliminate this delay, switch to a manual mode or turn off this feature.
- **Speed and duplex negotiation**—If auto-negotiation on the switch is set to off and the server is not configured to that speed and duplex setting, then the switch does not negotiate with that server.

Verify that PXE is also running properly on the server. The system must be set to boot off PXE before any other bootable devices are present in the system.

A system booted PXE, but timed out waiting for the PXE server to respond

Verify that the WinPE boot images are pushed to the appropriate distribution point. In addition, the distribution points used must have PXE enabled. Verify this setting by selecting **Administration > Site Configuration > Server and Site System Roles**, selecting the appropriate distribution point, right-clicking the Distribution Point role, and then selecting **Properties > PXE**.

WinPE never starts the task sequence
Check the SMSTS.LOG file at `X:\windows\temp\smstslog\smsts.log`. If a package does not download or cannot be accessed, you might not have the appropriate network drivers installed. You might need to update the WinPE image with newer WinPE drivers for the target platform. Verify that all packages referenced in the task sequence are available from the distribution point. WinPE validates all packages to make sure they are available before processing the task sequence.

A task sequence reports "Failed to resolve task sequence dependencies", with the driver pack imported by CIK as the dependency at fault, even though the content status says "Distributed"
There is an issue with Configuration Manager where sometimes the hashes for the package are not generated, which results in the device being unable to locate the content since the hashes are used for those purposes. To resolve this, select the driver pack, right-click and select **Update Distribution Points**, and then select **Yes** on the dialog that appears. After the process completes, the driver pack should be able to be located and resolved by the task sequence.

A target system failed to run or use an updated BCU file
You must update the distribution points containing the BCU package when you modify, add, or remove a configuration file.

The default boot order does not enable PXE to boot when a valid drive exists
When an active partition is created on a hard drive, it automatically becomes a bootable device if a valid operating system has been installed. If the PXE NIC is after the hard drive in the boot order, then the hard drive boots to Windows before PXE or causes an "Invalid System Partition" error if Windows is not installed. To resolve this issue, verify that PXE is placed before the hard drive in the boot order. The boot order can be set by using **HP Client BIOS Configuration Utility** in a task step. The boot order can also be set in the BIOS on the target platform. See the documentation for that platform for specific instructions on how to do this.

For more info on using BCU to set the boot order, see Configuring the Set BIOS Configuration task step.

If PXE is first in the boot order, the computer does not actually boot to PXE unless Configuration Manager has a mandatory task sequence for it to run.

A task sequence fails with the error "Failed to Download Policy"
This error code (0x80093102 or 0x80004005) refers to a certificate validation issue. The SMSTS.LOG file displays an entry with any of the following text:

- `CryptDecryptMessage ( &DecryptParams, pbEncrypted, nEncryptedSize,0, &nPlainSize, 0 ), HRESULT=80093102`
- `no cert available for policy decoding`

The following are possible causes:

- The misconfiguration of your domain or site server, such as the DNS not pointing to the site server or the site server not specifying a valid FQDN (which is referred to by the DNS listing) can cause this error. If your site server does not specify a FQDN and only specifies the NETBIOS name, and your DNS server tries to refer to the FQDN, an incorrect lookup might cause this error.
- The certificate being used for PXE and boot media is blocked or missing. Verify the certificates under the **Site Settings** node and whether any certificates are blocked or missing. Open the certificates and ensure that they are actually installed into the certificate store. If not, install them.

If the task sequence still fails, remove the package from the distribution points and/or groups, and then add it back. This causes the package hash to be regenerated.

A task sequence does not run again even after clearing the PXE advertisement
You must ensure that the deployment is set to allow a rerun so that the advertisement is applied to the computer regardless of whether it previously ran the task sequence. This can be set by going to the properties page of the deployment and selecting **Scheduling > Rerun behavior**.

A task sequence fails at Apply Operating System with "Failed to make volume X:\bootable"
This issue is indicated by log content similar to the following message:

- `MakeVolumeBootable( pszVolume ), HRESULT=80004005`
- `(e:\nts_sms_fre\sms\client\osdeployment\applyos\installcommon.cpp,759)`
- `Failed to make volume E:\ bootable. Please ensure that you have set an active partition on the boot disk before installing the operating system.`
- `Unspecified error (Error: 80004005; Source: Windows)`

- `ConfigureBootVolume(targetVolume), HRESULT=80004005`
- `(e:\nts_sms_fre\sms\client\osdeployment\applyos\applyos.cpp,326)`
- `Process completed with exit code 2147500037`

To resolve this issue:

If you are using a **Format & Partition** action in your task sequence to partition the hard drives for MBR systems, select the **Make this the boot partition** check box. If you do not select this check box and the computer has a single hard drive, then the task sequence engine automatically makes one of the partitions the boot partition. If there are multiple drives, it cannot automatically determine which boot partition must be bootable.

System environment variables are not carried over to the next action in the task sequence

When a task sequence runs, commands are executed in a command shell. When that task ends, so does that command shell environment, causing the loss of any system variables defined within that task. Verify that variables that pass between tasks are set as Task Sequence variables, Collection variables, or Machine variables.

A task sequence reported an error while executing

Although there can be a wide variety of reasons why a task sequence fails to fully execute, there are a number of common reasons that might need to be resolved to fix the task sequence execution issue:

- Ensure that the DNS and WINS servers are working properly and are stable.
- Ensure that the supplied credentials in the task sequence steps have the necessary access rights to the SCCM server to clear and set task sequence variables and PXE flags.
- If attempting to apply BIOS settings via the BCU while in WinPE, the disk must already be partitioned and formatted to allow downloading of the package to the system.

Examining the log files as shown in step #4 of <u>Before contacting HP support</u> might also provide insight into the reason for failure.

Contacting HP support

Before contacting HP support

Before you contact HP, perform the following procedure to help reduce the time needed to diagnose the issue at hand:

1. Gather the following info:
   - Software product name
   - Hardware product model number
   - Operating system type and version
   - Applicable error message
   - Third-party hardware or software
   - Technical support registration number (if applicable)
2. Export the task sequence you are using by right-clicking the task sequence and selecting **Export**.
3. If the issue appears, collect screen captures of the relevant portions.
4. If the issue is related to the installation of the product or occurs soon after installation:
   A. Copy the MSI installation log located in the temporary files directory (locate using the `%TEMP%` environment variable). This file is usually located in a "1" directory and has a random name that is formatted like `MSI<RandomCharacters>.LOG`.
   B. Copy the support packages installation log located in the temporary files directory (locate using the `%TEMP%` environment variable). The file name is `HPClientSCCM2012Kit-setup.log`.
5. If the issue occurred while using the console, copy the HP CIK log files located in `%TEMP%\hpclient`. In addition, the Configuration Manager console log files located in the **AdminUILog** folder of the Configuration Manager console should be copied as well.
6. If the issue occurred while running a task sequence, the following files should be copied from the WinPE environment. These files can be accessed during task sequence execution by pressing F8 to open the command prompt. To use the command prompt in WinPE, select the **Enable command support** box for the boot image. This option can be found by right-clicking the boot image and selecting **Properties > Windows PE**.
   A. Copy the **SMSTS.LOG** file from where WinPE might be stored:
      - In `X:\Windows\Temp\Smstslog` for PXE boot
      - On a local (for example, C: or D:) drive under `\Smstslog`

- With an SMSTSLOG<Time-Based-Name>.LOG file

B. Copy the files used as input to the configuration task, such as configuration INI or XML files.

C. Copy SetupAPI.APP.LOG and SetupAPI.DEV.LOG from WinPE stored in X:\Windows\inf for PXE boot.

7. Prepare a complete, detailed explanation of the issue, including the following:

- The exact point of failure (for example, the action running when the process failed, a description or screen captures of error messages and error codes)

- A detailed description of the computers being configured (model, hardware configuration, and NIC details)

- A description of other circumstances, such as the following:

    − Has this task sequence or action ever worked? When did it stop working?

    − If it had worked before, what is different now? Is the task sequence being applied to different computer types, is it using different configuration files or different task sequence variables, or has something else been modified?

How to contact HP

Use the following methods to contact HP support:

- Go to the Contact HP worldwide website:

  http://www.hp.com/go/assistance

- Use the Contact HP link on the HP Support Center website:

  http://www.hp.com/go/hpsc

- In the United States, call +1 800 334 5144 to contact HP by telephone. This service is available 24 hours a day, 7 days a week. For continuous quality improvement, conversations might be recorded or monitored.

Appendix A—List of supported mass storage drivers for Windows XP

The following table shows the required mass storage drivers for Windows XP on 2010 HP systems:

2010 HP systems		BIOS settings for SATA operation	Driver name	Driver model
Desktops				
HP 8100 CMT	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel 5 Series/3400 Series SATA AHCI Controller
HP 8100 SFF	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel 5 Series/3400 Series SATA AHCI Controller
HP 6000 AiO	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel ICH10D/DO SATA AHCI Controller
HP 8000F	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel ICH10D/DO SATA AHCI Controller
HP 6005 USDT	x86	AHCI	AMD AHCI Compatible RAID Controller	AMD AHCI Compatible Controller–x86 platform
Workstations				
HP Z400/Z600/Z800	x64	Default RAID + AHCI	Intel ESB2 SATA RAID Controller	Intel ICH8R/ICH9R/ICH10R/DO/5 Series/3400 Series SATA RAID Controller
HP Z400/Z600/Z800	x64	Default RAID + AHCI	Intel ESB2 SATA RAID Controller	Intel ICH8R/ICH9R/ICH10R/DO/5 Series/3400 Series SATA RAID Controller

The following table shows the required mass storage drivers for Windows XP on 2011 HP systems:

2011 HP systems		BIOS settings for SATA operation	Driver name	Driver model
Desktops				
HP 8200 CMT	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel Desktop/Workstation/Server Express Chipset SATA AHCI Controller
HP 8200 USDT	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel Desktop/Workstation/Server Express Chipset SATA AHCI Controller
HP 8200 SFF	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel Desktop/Workstation/Server Express Chipset SATA AHCI Controller
HP 8200 AiO	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel Desktop/Workstation/Server Express Chipset SATA AHCI Controller
HP 6200 SFF	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel Desktop/Workstation/Server Express Chipset SATA AHCI Controller
HP 6200 MT	x86	AHCI	Intel ESB2 SATA AHCI Controller	Intel Desktop/Workstation/Server Express Chipset SATA AHCI Controller
Notebooks				
ProBook 6360b	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
ProBook 6460b	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
ProBook 6560b	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
ProBook 6465b	x86/x64	AHCI	AMD Advanced Host Controller Interface (AHCI) Driver	AMD SATA AHCI Controller
ProBook 6565b	x86/x64	AHCI	AMD Advanced Host Controller Interface (AHCI) Driver	AMD SATA AHCI Controller

ProBook 5330m	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
EliteBook 2560p	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
EliteBook 2760p	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
EliteBook 8460p	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
EliteBook 8560p	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
EliteBook 8460w	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
EliteBook 8560w	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
EliteBook 8760w	x86/x64	AHCI	Intel Rapid Storage Technology Driver	Intel Mobile Express Chipset SATA AHCI Controller
Workstations				
Z210 SFF	x64	Default RAID + AHCI	Intel ICH7R/DH SATA RAID Controller	Intel Desktop/Workstation/Server Express Chipset SATA RAID Controller
Z210 SFF	x86	Default RAID + AHCI	Intel ESB2 SATA RAID Controller	Intel Desktop/Workstation/Server Express Chipset SATA RAID Controller
Z210 CMT	x64	Default RAID + AHCI	Intel ICH7R/DH SATA RAID Controller	Intel Desktop/Workstation/Server Express Chipset SATA RAID Controller
Z210 CMT	x86	Default RAID + AHCI	Intel ESB2 SATA RAID Controller	Intel Desktop/Workstation/Server Express Chipset SATA RAID Controller
LSI 9212	x64	Default RAID + AHCI	LSI Adapter, SAS2 2116 Meteor ROC(E)	LSI Fusion - MPT SAS2 Drive (XP x64)
LSI 9212	x86	Default RAID + AHCI	LSI Adapter, SAS2 2116 Meteor ROC(E)	LSI Fusion - MPT SAS2 Drive (XP x86)
LSI 3041e	x64	Default RAID + AHCI	LSI Adapter, SAS 3000 Series, 4 Port with 1064 -StorPort	LSI Fusion - MPT SAS Drive (XP x64)
LSI 3041e	x86	Default RAID + AHCI	LSI Adapter, SAS 3000 Series, 4 Port with 1064 -StorPort	LSI Fusion - MPT SAS2 Drive (XP x86)
LSI 9620	x64	Default RAID + AHCI	LSI Logic MegaRAID SAS 8408E RAID Controller	LSI MegaRAID SAS RAID Controller Drive (Windows XP)
LSI 9620	x86	Default RAID + AHCI	LSI Logic MegaRAID SAS 8408E RAID Controller	LSI MegaRAID SAS RAID Controller Drive (Windows XP-64)

The following table shows the required mass storage drivers for Windows XP on 2012 HP systems:

2012 HP systems		BIOS settings for SATA operation	Driver name	Driver model
Desktops				
HP 8300 AiO	x86	Default AHCI	Intel ICH7R/DH SATA AHCI Controller	Intel 7 Series/C216 Chipset Family SATA AHCI Controller
HP 8300 CMT	x86	Default AHCI	Intel ICH7R/DH SATA AHCI Controller	Intel 7 Series/C216 Chipset Family SATA AHCI Controller

HP 8300 MT	x86	Default AHCI	Intel ICH7R/DH SATA AHCI Controller	Intel 7 Series/C216 Chipset Family SATA AHCI Controller
HP 8300 SFF	x86	Default AHCI	Intel ICH7R/DH SATA AHCI Controller	Intel 7 Series/C216 Chipset Family SATA AHCI Controller
HP 8300 USDT	x86	Default AHCI	Intel ICH7R/DH SATA AHCI Controller	Intel 7 Series/C216 Chipset Family SATA AHCI Controller
HP 6300 AiO	x86	Default AHCI	Intel ICH7R/DH SATA AHCI Controller	Intel 7 Series/C216 Chipset Family SATA AHCI Controller
HP 6300 MT	x86	Default AHCI	Intel ICH7R/DH SATA AHCI Controller	Intel 7 Series/C216 Chipset Family SATA AHCI Controller
HP 6300 SFF	x86	Default AHCI	Intel ICH7R/DH SATA AHCI Controller	Intel 7 Series/C216 Chipset Family SATA AHCI Controller
Notebooks				
HP 6475b	x86	Default AHCI	AMD SATA AHCI Controller	AMD SATA Controller
HP 2170p	x86	Default AHCI	Intel ICH7R/DH SATA RAID Controller	Intel 7 Series Chipset Family SATA AHCI Controller
HP 2570p	x86	Default AHCI	Intel ICH7R/DH SATA RAID Controller	Intel 7 Series Chipset Family SATA AHCI Controller
HP 8470p	x86	Default AHCI	Intel ICH7R/DH SATA RAID Controller	Intel 7 Series Chipset Family SATA AHCI Controller
HP 8570p	x86	Default AHCI	Intel ICH7R/DH SATA RAID Controller	Intel 7 Series Chipset Family SATA AHCI Controller
HP 8570w	x86	Default AHCI	Intel ICH7R/DH SATA RAID Controller	Intel 7 Series Chipset Family SATA AHCI Controller
HP 8470w	x86	RAID	Intel ICH7R/DH SATA RAID Controller	Intel Mobile Express Chipset SATA RAID Controller
HP 8770w	x86	Default AHCI	Intel ICH7R/DH SATA RAID Controller	Intel 7 Series Chipset Family SATA AHCI Controller

For more information

For more information on using Microsoft System Center 2012 Configuration Manager, go to Microsoft's information page: http://technet.microsoft.com/en-us/systemcenter/hh285244.

For all your client manageability needs, go to the HP Client Management Solutions website: http://www.hp.com/go/clientmanagement. For all HP client tools and driver packs, select **HP CMS Download Library** on the HP Client Management Solutions home page.

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